PSEUDO-LIVE PERFORMANCE

RELATED APPLICATION

This non-provisional application is related to co-pending non-provisional application no. _____ by E. Steve Crandall, also entitled "PSEUDO-LIVE PERFORMANCE", filed on even date herewith and identified by Attorney Docket No. 1999-0735-1.

BACKGROUND OF THE INVENTION

1. Field of Invention

This invention relates to pseudo-live performance.

2. Description of Related Art

Currently, performances such as radio or television broadcasts are transmitted to end-users via wireless and/or wired networks. Due to increased network traffic, better technology is needed to make more efficient use of available network resources.

SUMMARY OF THE INVENTION

This invention provides pseudo-live performance generator (PLPG) systems and methods that output performances using both locally stored information and transmitted information. Unlike conventional broadcasts (e.g., radio or television), the PLPG transmits one or more commands for generating a performance such as a song or movie. An end-user's performance reproduction device, such as an enhanced radio or television set, can then access and generate the performance by retrieving the song or movie from a local storage. A live performance may be "produced" immediately by the performance reproduction device by proper sequencing of the locally stored information including current weather reports, traffic, news, songs, movies, etc. Since commands may require much less network resources to broadcast, the PLPG may significantly reduce network traffic.

The locally stored information may be encrypted to prevent unauthorized access. In this way, pseudo-live performances may be generated by the performance reproduction device without compromising protection of stored information.

These and other features and advantages of this invention are described in or are apparent from the following detailed description of exemplary embodiments.

BRIEF DESCRIPTION OF THE DRAWINGS

This invention will be described in detail with reference to the following figures, wherein like numerals represent like elements, and wherein:

Fig. 1 is a diagram of a pseudo-live performance generator system;

Fig. 2 is an exemplary block diagram of a performance transmitter of Fig. 1;

Fig. 3 is a flowchart of an exemplary method for transmitting a performance;

Fig. 4 is an exemplary block diagram of a performance reproduction device of Fig. 1;

Fig. 5 is an exemplary diagram showing content of a storage device of Fig. 1;

Figs. 6-8 show exemplary diagrams of command sequences; and

Fig. 9 is a flowchart of an exemplary method for outputting a performance.

DETAILED DESCRIPTION OF PREFERRED EMBODIMENTS

In typical radio or television transmission, a transmitting station transmits a mix of real-time performance, such as local news, weather forecasts and real-time comments by the announcer or disk jockey, for example, and stored information, such as movies, songs, advertisements and/or the like. The transmission of the performance is synchronized with the output of the performance by an output device such as a radio or television set. Depending on a particular programming, the real-time performance may constitute a relatively small portion of the total transmission of the broadcasting station.

If information, such as entire libraries of songs or movies, for example, are stored locally near end-users, this information can be accessed and reproduced in response to commands received from a transmitting station via a network. Instead of transmitting entire songs or movies, for example, the radio or television station can transmit a command for an end-user's performance reproduction device to reproduce the song or movie. The end-user's performance reproduction device, such as an enhanced radio or a television set, may access and reproduce the locally stored song or movie based on received commands. Since the radio or television station need not transmit the entire performance, network traffic can be significantly reduced. Additionally, since information is stored at or near the performance reproduction device and subsequently reproduced, commands and/or other information necessary to

generate a performance may be transmitted asynchronously with generation of a performance. The commands and/or other information may be transmitted at speeds faster or slower than the performance. Thus, any available network resources may be used independent of the speed of transmission. Therefore, network resources may be utilized more efficiently.

Fig. 1 is a diagram of a network 100 that couples a performance transmitter 200 to a performance reproduction device 300. The network 100 may be any type of network or combinations of networks such as a cable network, telephone network, data network, broadcasting network, or the like over any type of medium, such as wired, wireless or optical.

The performance transmitter 200 may be, for example, a radio or television broadcasting station or any other type of performance transmitter adapted to transmit commands to performance reproduction device 300. The performance reproduction device 300 is coupled to the network 100 via a link 130, which may also be either wired, wireless or optical, for example. The performance reproduction device 300 may be, for example, an enhanced radio or television set of an end-user.

A storage device 400 is accessible by the performance reproduction device 300, and may be a mass storage device capable of storing a large quantity of information on the order of terabits or more, for example. The storage device 400 may be Read-Only Memory (ROM), erasable ROM, disk, flash, etc. Although shown separately, the storage device 400 and the performance reproduction device 300 may be incorporated within the same physical unit, i.e., as part of the performance reproduction device 300. For example, the storage device 400 may be located within the enhanced radio or television set. If the storage device 400 is provided separately, the performance reproduction device 300 may directly retrieve information from the storage device 400. For example, the performance reproduction device 300 may access the storage device 400 located at a local server of the network 100 that is directly accessible via local connections. In this way, local network resources more dedicated to a smaller number of end-users are leveraged to conserve network resources that may be utilized by a larger number of end-users.

Fig. 2 shows an exemplary block diagram of the performance transmitter 200 of Fig. 1. The performance transmitter 200 may include a network interface 210, a performance input device 220, a mixing command input device 230, a memory 240, and a controller 250, all of which are interconnected by a signal bus 260.

The performance input device 220 receives performance information, such as real-time voice input from a radio announcer or a television news anchor, or receives pre-recorded information such as advertisements or the like. The real-time performance information may be transmitted directly to the network 100 via the network interface 210 or stored in the memory 240 and transmitted at a later time.

The command input device 230 may include one or more input devices (not shown), such as a keyboard, mouse, or one or more manual switches, that enable an operator to input one or more commands. The one or more commands may be transmitted to the network 100 via the network interface 210 or saved in the memory 240 for later transmission as controlled by the controller 250. When received, the commands activate reproduction of performance information for a pseudo-live performance, as described in more detail below.

Fig. 3 is a flowchart of an exemplary process for transmitting a performance. In step 1100, the process transmits information such as songs, etc. to be stored in the storage device 400 via the network interface 210, for example. It should be appreciated that step 1100 may not be necessary because information may have been pre-stored in the storage device 400. The process then goes to step 2100. In step 2100, the process composes performance information including one or more commands for reproducing a performance based on the stored information. The one or more commands may include performance-oriented commands, housekeeping commands, programming commands, or the like, described in more detail below, and/or may include commands for accessing other commands already stored in the performance reproduction device 300, as also described in more detail below. The composed performance information may also include real-time performance information and/or stored performance information. The process then goes to step 3100.

In step 3100, the process transmits the performance information to a network-controlled performance reproduction device and goes to step 4100. In step 4100, the process determines whether any more information is to be transmitted. If no more information is to be transmitted, the process goes to step 5100 and ends. If more information is to be transmitted, the process goes to step 6100 and determines whether the information to be transmitted is to be stored in the storage device. If the information to be transmitted is to be stored in the storage device, the process returns to step 1100. If the information to be transmitted is not to be stored in the storage device, i.e., if the information to be transmitted is one or more commands or the like that are to be used immediately or temporarily stored in a buffer separate from the storage device, the process returns to step 2100.

A transmitter may transmit data to the storage device while the performance reproduction device is reproducing stored information from the storage device 400. A radio station could transmit one or more commands to activate reproduction of stored information by the enhanced radio, for example; and then while the enhanced radio is reproducing the stored information, such as a song, transmit additional information, such as the following morning's news, for example. Furthermore, since the transmitter is not constrained to transmit synchronously with generation of the performance, the transmitter may transmit at speeds faster or slower than the performance. Thus, "bursting" technology or the like, in which information is transmitted at very high speeds, may be utilized. Further, if it is cost-effective to transmit data at slower-than-performance speeds using less-costly transmitting technology and equipment at off-peak periods of the network, for example, the information may be transmitted at slower-than-performance speeds.

In order to prevent unauthorized access, it may be desirable for the information stored in the storage device 400, or a portion of the information, to be encrypted such that it can only be read with the aid of a key. The key may be transmitted along with or as part of commands transmitted over the network 100. Alternatively, the key may be sent to an end-user separately by e-mail, regular mail, or be included with the performance reproduction device 300 (i.e., installed with the hardware), for example. The keys may be sent upon receipt of monthly payments, for example, or special keys

may be sent to the end-user as a promotional tool for new features already stored in the storage device 400.

Fig. 4 is an exemplary block diagram of the performance reproduction device 300. The performance reproduction device 300 may include a network interface 310, a performance output device 320, a storage device interface 330, a communication synthesizer 340, a memory 350, and a controller 360, all of which are interconnected by a signal bus 360. The performance reproduction device 300 receives performance information from the network 100 via the network interface 310. The network interface 230 may include wired, optical or wireless interfaces such as an antenna, satellite dish or the like.

The communication synthesizer 340 may perform audio or video synthesis. For example, if text data of a news broadcast or the like is received from the network 100, the communication synthesizer 340 may, using known or later-developed techniques, generate a spoken reproduction of the news broadcast based on the text data. As another example, when the performance reproduction device 300 is an enhanced television or the like, the communication synthesizer 340 may, using known or later-developed techniques, generate a video of a "virtual weatherman" giving a weather report based on text or other data received from the network 100. The communication synthesizer 340 may include an input device that allows an end-user to select synthesis options. For example, the end-user could select desired voice characteristics, a favorite newscaster, actor, or actress, or sign language or close-captioning options to be used in generating the pseudo-live performance. Language translation functions may also be provided in the communication synthesizer 340 so that, for example, an end-user may "tune in" to an English radio station, but hear the performance in Spanish.

The memory 350 may store data such as programs or control parameters and may also serve as a buffer for information received from the network 100. For example, the memory 350 may store information transferred from, or information to be transferred to, the storage device 400 or buffer information received from the network 100. In fact, the memory 350 may be a part of the storage device 400 or vice

versa. The controller 360 controls where the information received from the network 100 is stored.

When the performance information is received from the network 100 via the network interface 310, the controller 360 may cause the performance information to be sent directly to the performance output device 320 or stored in the memory 350 for later output based on commands either received from the network 100 or generated by a program in the memory, for example. The program may function based on a profile that indicates end-user preferences. When a command is received from the network 100 via the network interface 310, the controller 360 may, based upon the command, retrieve information from the memory 350 or from the storage device 400 via the storage device interface 330 for output to the performance output device 320 for the pseudo-live performance.

The controller 360 may cause performance information received from the network 100 to be stored in the storage device 400 for subsequent reproduction. The controller 360 may even send performance information to the performance output device 320 and the storage device 400 at the same time. For example, when the performance information is a newly released song or movie, it may be output via a speaker or television monitor while being transmitted from a transmitting station, and simultaneously recorded in the storage device 400 for subsequent reproduction.

Fig. 5 shows an exemplary diagram of the storage device contents 405. The storage device contents 405 may include a command storage portion 410, a communication synthesis portion 420 including voice models and/or other communication synthesis data, a short-term overlay storage 430, a macro portion 440 including news, weather and traffic storage portions, for example, and long-term performance recordings 450 such as songs 1-N where N is a positive integer.

The command storage portion 410 may store individual commands and/or command sequences, such as are described in detail below. Furthermore, the command portion may contain pre-stored commands or command sequences, and/or commands or command sequences that have been transmitted over the network 100.

Commands may include performance commands, housekeeping commands, programming commands (i.e., software programs as compared to "radio" programs,

for example) or the like. Performance commands may be, for example, commands for reproducing information from specified locations of the storage device 400. Examples of performance commands are given in the following Table 1.

Table 1

1	Command Code	Time	Duration	Pointer	---
2	Play 1	Immediate	5 min.	attached	---
3	Play 2	12:00 p.m.	2 min.	file id	---
4	Repeat daily	12:02 p.m.	< 5 min.	macro id	---
.	.	.	.	.	.
.	.	.	.	.	.
.	.	.	.	.	.

Row 1 of Table 1 shows that a performance command may include a command code, time, duration, and pointer parameters, for example. Other parameters may also be included in a command as indicated by the dashes. Rows 2-4 show examples of possible commands. Row 2 shows a "Play 1" command code that instructs the performance reproduction device 300 to output performance information appended to the command beginning immediately and continuing for five minutes. The Play 1 command code may also include a pointer to a file in the storage device 400. For example, a special value of "$FFFF_x$" may indicate "attached" and any other value may indicate a pointer in the storage device 400.

Row 3 shows a "Play 2" command code that instructs the performance reproduction device 300 to reproduce a stored information located at file id beginning at 12:00 p.m. and continuing for 2 minutes. Row 4 shows a "Repeat daily" command code that instructs the performance reproduction device 300 to generate a performance using a macro at macro id beginning at 12:00 p.m. and continuing for less than five minutes. A macro may be a predetermined sequence of commands or special set of program instructions to perform a sequence of functions. The "Repeat daily"

command may, for example, execute a macro that reproduces a news broadcast using the above-described communication synthesizer 340.

In the above-described performance commands, the "duration" may correspond exactly to the duration of the information to be reproduced. Alternatively, the performance reproduction device 300 may, for example, insert predetermined filler material before and/or after the stored information, and/or increase or decrease the playback speed (e.g., by evenly distributing or removing short intervals of silence, or actually increasing or decreasing the time used for playback) in order to fill the instructed duration. For example, if the indicated "duration" is five minutes, but the stored information only requires four minutes and fifty-three seconds to reproduce, the performance reproduction device may insert a six-second message, such as "You are listening to station 98.7, WMZQ", and a one-second interval of silence. Alternatively, rather than containing a "duration" designation, a command may contain instructions to begin a performance reproduction after a previous command has been executed, without reference to a particular time of day.

Housekeeping commands may include, for example, commands for manipulating or reorganizing information in the storage device 400. Some examples of housekeeping commands are given in the following Table 2.

Table 2

1	Command Code	Type	Size	Pointer or Name	---
2	Load	movie	33 Gigabytes	attached	---
3	Delete	traffic	11 Megabytes	file id	---
4	Overlay	weather	18 Megabytes	file id	
5	Change	voice model	18 Megabytes	file id	---
.	.	.	.	.	.
.	.	.	.	.	.
.	.	.	.	.	.

Row 1 of Table 2 shows that a performance command may include a command code and type, size, and pointer or name parameters, for example. Additional or alternative parameters may also be included in a command. Rows 2-5 show examples of housekeeping commands. Row 2 shows a "Load" command that loads an attached (i.e., being transmitted via the network 100) 33 Gigabyte movie to a specified location of the storage device 400. Row 3 shows a "Delete" command that instructs that stored traffic information is to be deleted. Row 4 shows an "Overlay" command that instructs that stored weather information is to be replaced with new information. Row 5 shows a "Change" command that changes a voice model of a particular anchor person due to an actual change in the voice of the anchor person (e.g., if the anchor person caught a cold).

Programming commands (software programs) may include, for example, software instructions for controlling the performance reproduction device 300 to generate pseudo-live performance. For example, there may be programming commands such as "case statement", "loop", "if-then-else" and/or the like. Such well known commands may be used to create macros or complete program productions based on information received over the network 100 and/or information retrieved from the storage device 400.

The communication synthesis portion 420 of the storage device contents may contain voice models, image models and/or the like that the performance reproduction device 300 accesses to generate a synthesized performance based on text data or the like. For example, voice model 1 may be a generic male voice model, voice model 2 a generic female voice model, voice model 3 a voice model of a known radio or television personality, voice model 4 a voice model of an end-user's grandfather, and so forth.

The short-term overlay storage portion 430 may provide a storage location for temporary information, such as special announcements, advertisements, and/or the like, which will be subsequently replaced with fresh information. Information stored in the short-term overlay storage portion 430 may be in the form of text data that is used, in conjunction with information from the above-described communication synthesis portion 420, to generate synthesized performance.

The macro portion 440 may contain separate sections for news, weather and traffic, for example, and may be updated as appropriate through the network 100 via load commands. The news, weather and traffic sections may be used like the short-term overlay storage 430 described above, storing information that will subsequently be replaced, and may store information in the form of text data that will be used, in conjunction with information from the above-described communication synthesis portion 420, to generate synthesized performance. Furthermore, the news, weather and/or traffic sections may contain standard weather report recordings and/or text data segments, such as "Today will be partly cloudy," "There is a 40% chance of rain," "Today's high temperature will be in the 80's," and so forth. In this case, rather than transmitting entire weather reports via the network 100, macro commands may be transmitted that activate reproduction of one or more appropriate standard recordings or text data segments that have been pre-stored in the macro portion 440. For example, a macro may be defined in which the three above-mentioned phrases are combined. When a command is received corresponding to this macro, the performance reproduction device outputs a synthesized or pre-recorded performance that says, "Today will be partly cloudy. There is a 40% chance of rain. Today's high temperature will be in the 80's."

The long-term performance recordings portion 450 may include song storage sections Song 1 - Song N (when the performance reproduction device 300 is an enhanced radio), movie storage sections (when the reproduction device is an enhanced television), and/or other types of performance recordings, for example. Each song storage section, movie storage section or the like may contain a pre-stored song or movie or the like, or may include empty sections, thus providing a space for a song or movie to be stored in the future. Parts of the long-term performance recordings portion 450 may be read only, while other parts may be overwritten by other information.

Each item of information in the long-term performance recordings portion 450, such as each song or movie, may be tagged with as much additional information as desired. For example, country music songs may be tagged with a "country" tag, songs about girls named "Charlene" may be appropriately tagged, and/or tags may be

provided that cause the name of the song, the recording artist, and/or the like to appear on a display while the song is being reproduced. These tags may, for example, be accessed by the above-described commands. For example, a command may instruct that songs having a "Garth Brooks" tag be played in succession.

It should be appreciated that there may be various other portions included in the storage device 400, such as an advertisement portion, a commercial portion and/or the like. It should also be appreciated that the storage device may contain fewer storage portions than are shown in Fig. 5. For example, the storage device may contain only the long-term performance recordings portion 450.

The commands described above may be transmitted and/or stored as part of larger command sequences. This allows an extended period of pseudo-live performance generation to be programmed in advance. Exemplary command sequences are described below.

Fig. 6 is a diagram of one exemplary command sequence 500. The command sequence 500 includes "news" commands 510 and 522, "weather" commands 512 and 524, "traffic" commands 514 and 526, and "song" commands 516, 518, 520 and 528. In this example, at 6:00 AM on Day 1 of programming, the "news" command 510 causes news information to be reproduced from the "news" storage portion of the macro portion 440 (Fig. 5) of the storage device 400. Next, at 6:15 AM, the "weather" command 512 causes weather information to be reproduced from the "weather" storage portion of the macro portion 440 of the storage device 400. At 6:18 AM, the "traffic" command 514 causes traffic information to be reproduced from the "traffic" storage portion of the macro portion 440 of the storage device 400. Then "song" commands 516, 518 and 520 cause song 32, song 45 and song 981 to be reproduced from the long-term performance recordings portion 450 of the storage device 400 at 6:23 AM, 6:27 AM and 6:32 AM, respectively.

The command sequence 500 may be as long as desired, and may include commands for reproducing information that has not yet been stored. For example, the command sequence 500 includes the "news" command 522 for reproducing news information from the storage device 400 on Day 461 of programming, but it is obvious that, at the time the command sequence 500 is sent, the news for Day 461 is not yet

known. Therefore, the "news" storage portion of the macro portion 440 of the storage device 400 will be updated with fresh news information for Day 461 at some time prior to 6:00 AM on Day 461, for example, and then this updated information will be reproduced at 6:00 AM on Day 461 based on the previously transmitted command sequence.

Furthermore, the command sequence 500 itself may be updated or interrupted. For example, according to the command sequence 500, song 541 is scheduled to be reproduced at 6:23 AM on Day 461. However, if it is desired to transmit an urgent and/or unexpected public announcement at 6:20 AM, for example, the public announcement may be transmitted and stored in the storage device 400 and a new command corresponding to the public announcement may be transmitted to replace the "song" command 528. Then, at 6:23 AM, rather than reproducing song 541, as previously scheduled, the performance reproduction device 300 will reproduce the public announcement. Alternatively, at 6:20 AM, the public announcement may, as a real-time transmission, interrupt the traffic information that is currently being reproduced based on the "traffic" command 526.

Fig. 7 is a diagram of another exemplary command sequence 600. The command sequence 600 is similar to the command sequence 500, except that the "news", "weather" and "traffic" commands are replaced with "real-time transmission" blocks 610 and 618. In this case, rather than pre-storing news, weather and traffic information in the storage device 400, the news, weather and traffic information, and/or any other desired information, is transmitted in real-time to the performance reproduction device 300 during the indicated time blocks.

Fig. 8 is a diagram of yet another exemplary command sequence 700. The command sequence 700 is not necessarily time dependent. The command sequence 700 includes "song" commands 710, 712, 714, 716, 720, 722, 724, ..., which cause songs to be reproduced from the storage device in the order of song 32, song 45, song 981, song 451, song 320, song 29, song 682, song 121, ... The order of the songs may be generated randomly, may be determined by a software program (programming commands), or may be selected as desired by one or more persons involved with transmitting or pre-storing the command sequence 700. Furthermore,

the command sequence 700 may contain one or more commands corresponding to songs that have not yet been stored in the storage device.

Using the command sequence 700, the performance reproduction device 300 reproduces songs in the instructed order until a signal is received from the network 100. The performance reproduction device 300 treats this receipt of a signal as a command to reproduce performance information received from the network 100. The performance reproduction device 300 then inserts performance information received from the network 100 into the mix of information being reproduced.

In Figs. 6-8, individual commands are part of larger command sequences. However, it should be appreciated that commands may be transmitted and/or stored individually, if desired or appropriate.

Program sequences may be generated by the reproduction device 300 by using programming commands such as loops, branches, if-then-else statements, and/or case statements as is well known to those skilled in software programming art. Special commands may handle real-time performances or account for unexpected circumstances such as storage failure, etc.

When it is desired to transmit information to the performance reproduction device 300, the performance transmitter 200 may, by keeping track of the time, know when a break, such as a break between songs, will occur and transmit a signal at this break. Alternatively, the performance transmitter 200 may transmit the signal at an arbitrary time, and the performance reproduction device 300 may receive the signal, temporarily store information transmitted from the performance transmitter via the network 100, and reproduce the transmitted information at the next available, or otherwise designated, break. Obviously, if a transmission from the performance transmitter 200 is urgent (e.g., national emergency), information such as a song, for example, that is currently being reproduced by the performance reproduction device 300 may be interrupted.

After the command sequence 700 has been thus interrupted and information received through the network 100 has been reproduced, the performance reproduction device 700 may continue reproducing songs according to the command sequence 700. Alternatively, a new command sequence may be followed.

Several examples of specific operations performed using the above-described network 100, performance transmitter 200, performance reproduction device 300 and storage device 400 are described below. In a first example, the performance transmitter 200 is a radio station, the performance reproduction device 300 is an enhanced radio, and the storage device 400 has been pre-loaded with a library of songs. A radio announcer speaks into a microphone, which is included in the performance input device 220 of Fig. 2, and says, for example, "Here are the three most-requested songs of this week." The announcer then pushes one or more buttons, for example, on the command input device 230, and a command signal sequence including a Play 1 command appending the announcer's real-time performance is generated and transmitted to the network 100.

The announcer's voice information announcing "Here are the three most-requested songs of this week" is output through the performance output device 320, corresponding in this case to a radio speaker, based on the Play 1 command. The remaining command signal sequence is executed by retrieving the three songs from the storage device 400 and outputting them to the radio speaker in the order indicated by the command signal sequence.

The radio station may transmit addition program information any time before the reproduction of the songs is completed. For example, the radio announcer may announce, "We will be back with more music after these messages from our sponsors" and then issue commands for reproduction of pre-recorded commercials or the like. The corresponding commands are transmitted to the performance reproduction device 300 prior to the actual performance output time. Thus, the radio station is provided great flexibility in performance production because the time of performance production is not tightly coupled to the time of performance output.

In a second example, the performance transmitter 200 may be a television station, and the performance reproduction device 300 may be an enhanced television set. The end-user watches a new episode of a weekly program. While the end-user is watching the new episode, the new episode is simultaneously recorded to the storage device 400. Months later, it is decided to re-run the episode. However, rather than re-transmitting the entire episode, the television station transmits one or more

command signals to the enhanced television set, instructing the enhanced television set to retrieve and output the episode from the storage device 400.

In a third example, the performance transmitter 200 is a radio station and the performance reproduction device 300 is an enhanced car radio. At 1:00 AM, the end-user is asleep at home in Washington, D.C., and is not listening to the car radio. However, the radio station receives world news information from the British Broadcasting Company in Great Britain, and automatically stores this information to the storage device 400, along with one or more commands. Later, at 7:30 AM, while driving to work, the end-user listens to the car radio. Based on the previously transmitted one or more commands, the car radio retrieves and reproduces the information that was stored earlier that morning beginning at 1:00 AM. In this manner, information may be transferred to the car radio at low network usage times and any time prior to the generation of a performance. Furthermore, from this example it is seen that a real-time radio announcer is not required.

Fig. 9 is a flowchart of an exemplary process for outputting a performance in response to information received from the network 100. In step 1000, the process receives performance information via the network 100 and goes to step 2000. In step 2000, the process decodes commands, if necessary, and mixes the performance information with stored information and goes to step 3000. In step 3000, the process outputs a performance and goes to step 4000.

In step 4000, the process determines whether one or more portions of the performance should be recorded. This determination may, for example, be based on whether the one or more portions of the performance are already stored in a local storage device. If the result of the determination of step 4000 is "YES", the process continues to step 5000. Otherwise, the process jumps to step 6000. In step 5000, the process records one or more portions of the performance and goes to step 6000 and ends.

It should be appreciated that steps 1000-5000 may be performed concurrently for different portions of the program. Furthermore, it should be appreciated that some embodiments of the invention may not implement steps 4000-6000. Also, the performance reproduction device 300 may independently generate the bulk of the

performance based on performance generation programs already stored in the storage device 400, and the performance generation programs may respond to information received via the network 100 to redirect the performance output.

The performance transmitter 200 and the performance reproduction device 300 can each be implemented on a general purpose or special purpose computer, a programmed microprocessor or microcontroller and peripheral integrated circuit elements, an application specific integrated circuit (ASIC) or other integrated or non-integrated circuit, a programmable logic device such as a PLD, PLA, FPGA or PAL, or the like, or any appropriate combination thereof. In general, any device capable of implementing at least some portions of the flowcharts shown in Figs. 3 and 9 can be used to implement the performance transmitter 200 or the performance reproduction device 300.

Using the above-described embodiments, "pseudo-live" transmission may be performed in which, although the performance reproduced by a performance reproduction device has the appearance of a "fully live" transmission, part of the performance has actually been stored in or near the performance reproduction device in advance. The end-user may not even realize that this is the case.

While the invention has been described in conjunction with the specific embodiments described above, many equivalent alternatives, modifications and variations will become apparent to those skilled in the art once given this disclosure. For example, the performance transmitter 200 and the performance reproduction device 300 are shown in Figs. 2 and 4 using bus architecture when any other architecture may be used as is well known in the art. Accordingly, the exemplary embodiments of the invention as set forth above are considered to be illustrative and not limiting. Various changes to the described embodiments may be made without departing from the spirit and scope of the invention.